

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An ink-jet head, comprising:

a passage unit in which a plurality of pressure chambers each connected to a corresponding nozzle are arranged adjacent to each other along a plane; and

an actuator unit that is fixed to the passage unit to change the volume of the pressure chambers,

wherein the actuator unit includes:

a piezoelectric element that spans a plurality of pressure chambers,

a plurality of individual electrodes that have been sintered on a surface of the piezoelectric element at positions corresponding to the respective pressure chambers, and that are arranged in two intersecting arrangement directions, and

a plurality of dummy electrodes of the same residual stress characteristics as the individual electrodes at positions other than positions corresponding to the pressure chambers and that are, on the surface of the piezoelectric element provided with the plurality of individual electrodes, the dummy electrodes being spaced from an outermost one of the individual electrodes in and positioned along each of the two intersecting arrangement directions of the plurality of individual electrodes, in a respective outward direction from the plurality of individual electrodes.
2. (Previously Presented) The ink-jet head according to claim 1, wherein the dummy electrodes and the individual electrodes have substantially the same residual stress characteristics relative to the piezoelectric element.
3. (Previously Presented) The ink-jet head according to claim 1, wherein the dummy electrodes and the individual electrodes are made of the same material.

4. (Previously Presented) The ink-jet head according to claim 3, wherein the dummy electrodes and the individual electrodes have substantially the same shape and the same size.

5. (Previously Presented) The ink-jet head according to claim 1, wherein each of the individual electrodes, other than the outermost one with respect to the arrangement directions of the plurality of individual electrodes, is surrounded with corresponding ones of the individual electrodes arranged in a predetermined pattern; and wherein the outermost one of the individual electrodes with respect to the arrangement directions of the plurality of individual electrodes is surrounded with a corresponding one of the individual electrodes and a corresponding one of the dummy electrodes arranged in substantially the same pattern as the predetermined pattern.

6. (Previously Presented) The ink-jet head according to claim 1, wherein: the plurality of pressure chambers are arranged adjacent to each other in a matrix on the plane of the passage unit; the plurality of individual electrodes are arranged adjacent to each other in a matrix on the surface of the piezoelectric element at positions corresponding to the respective pressure chambers; and

the plurality of dummy electrodes are arranged adjacent to each other so as to surround the plurality of individual electrodes arranged adjacent to each other in a matrix.

7. (Original) The ink-jet head according to claim 1, wherein the actuator unit further includes a common electrode that is formed, on a surface of the piezoelectric element opposite to the surface provided with the individual electrodes, to span the plurality of pressure chambers.

8. (Previously Presented) An ink-jet head, comprising:

a passage unit in which a plurality of pressure chambers each connected to a corresponding nozzle are arranged adjacent to each other in a matrix along a plane; and

an actuator unit that is fixed to the passage unit to change the volume of the pressure chambers,

wherein the actuator unit includes:

a plurality of piezoelectric elements that are put in layers and cover the plurality of pressure chambers arranged adjacent to each other in a matrix,

a plurality of individual electrodes that have been sintered on a surface of one of the plurality of piezoelectric elements and are arranged adjacent to each other in a matrix at positions corresponding to the respective pressure chambers,

a plurality of sintered members of the same residual stress characteristics as the individual electrodes at positions other than positions corresponding to the pressure chamber and that are, on the surface of the one of the plurality of piezoelectric elements, arranged adjacent to each other so as to surround the plurality of individual electrodes arranged adjacent to each other in a matrix, the sintered members and the individual electrodes having substantially the same residual stress characteristics relative to the piezoelectric elements, and

a common electrode that is formed, on a surface of the one of the piezoelectric elements opposite to the surface provided with the individual electrodes, to span the plurality of pressure chambers.

9-14. (Canceled)

15. (Currently Amended) An ink-jet head, comprising:

a passage unit in which a plurality of pressure chambers each connected to a corresponding nozzle are arranged adjacent to each other along a plane; and

an actuator unit that is fixed to the passage unit to change the volume of the pressure chambers,

wherein the actuator unit includes:

a piezoelectric element that spans a plurality of pressure chambers,

a plurality of individual electrodes that have been sintered on a surface of the piezoelectric element at positions corresponding to the respective pressure chambers, and that are arranged in two intersecting arrangements directions, and

one or more sintered dummy electrodes at positions other than positions corresponding to the pressure chambers and that are, on the surface of the piezoelectric element provided with the plurality of individual electrodes, the sintered dummy electrodes being spaced from an outermost one of the individual electrodes and positioned along in each of the two intersecting arrangement directions of the plurality of individual electrodes, in a respective outward direction from the plurality of individual electrodes, and

wherein the sintered dummy electrodes and the individual electrodes have substantially the same shape and the same size.

16. (Previously Presented) The ink-jet head according to claim 15, wherein the sintered dummy electrodes and the individual electrodes have substantially the same residual stress characteristics relative to the piezoelectric element.

17. (Previously Presented) The ink-jet head according to claim 15, wherein the sintered dummy electrodes and the individual electrodes are made of the same material.

18. (Previously Presented) The ink-jet head according to claim 15, wherein each of the individual electrodes, other than the outermost one with respect to the arrangement directions of the plurality of individual electrodes, is surrounded with corresponding ones of the individual electrodes arranged in a predetermined pattern; and

wherein the outermost one of the individual electrodes with respect to the arrangement directions of the plurality of individual electrodes is surrounded with a corresponding one of the individual electrodes and a corresponding one of the sintered dummy electrodes arranged in substantially the same pattern as the predetermined pattern.

19. (Previously Presented) The ink-jet head according to claim 15, wherein:

the plurality of pressure chambers are arranged adjacent to each other in a matrix on the plane of the passage unit;

the plurality of individual electrodes are arranged adjacent to each other in a matrix on the surface of the piezoelectric element at positions corresponding to the respective pressure chambers; and

a plurality of the sintered dummy electrodes are arranged adjacent to each other so as to surround the plurality of individual electrodes arranged adjacent to each other in a matrix.

20. (Previously Presented) The ink-jet head according to claim 15, wherein the actuator unit further includes a common electrode that is formed, on a surface of the piezoelectric element opposite to the surface provided with the individual electrodes, to span the plurality of pressure chambers.

21. (Previously Presented) An ink-jet head, comprising:

a passage unit in which a plurality of pressure chambers each connected to a corresponding nozzle are arranged adjacent to each other in a matrix along a plane; and

an actuator unit that is fixed to the passage unit to change the volume of the pressure chambers,

wherein the actuator unit includes:

a plurality of piezoelectric elements that are put in layers and cover the plurality of pressure chambers arranged adjacent to each other in a matrix,

a plurality of individual electrodes that have been sintered on a surface of one of the plurality of piezoelectric elements and are arranged adjacent to each other in a matrix at positions corresponding to the respective pressure chambers,

a plurality of sintered dummy electrodes at positions other than positions corresponding to each of the plurality of pressure chambers and that are, on the surface of the one of the plurality of piezoelectric elements, arranged adjacent to each other so as to surround the plurality of individual electrodes arranged adjacent to each other in a matrix, the sintered dummy electrodes and the individual electrodes having substantially the same residual stress characteristics relative to the piezoelectric elements, and

a common electrode that is formed, on a surface of the one of the piezoelectric elements opposite to the surface provided with the individual electrodes, to span the plurality of pressure chambers,

wherein the sintered dummy electrodes and the individual electrodes have substantially the same shape and the same size.

22. (Canceled)

23. (Previously Presented) The ink-jet head according to claim 8,

wherein the sintered members are spaced from an outermost one of the individual electrodes with respect to two arrangement directions of the individual electrodes, and

wherein the two arrangement directions are formed in intersecting planes.

24. (Canceled)

25. (Previously Presented) The ink-jet head according to claim 21,
wherein the sintered dummy electrodes are spaced from an outermost one of
the individual electrodes with respect to two arrangement directions of the individual
electrodes, and
wherein the two arrangement directions are formed in intersecting planes.